

CHAPTER 4.0

AFFECTED ENVIRONMENT

4.1 REGIONAL AND LOCAL SETTING

The Proposed Action site is located in the southeastern portion of LBNL in the Oakland-Berkeley hills, within Oakland's city limits, on mostly undeveloped slopes between LBNL Buildings 72 and 66 (see Figures 1, 2, and 3). The site also includes an existing paved parking lot with 18 striped parking spaces and a retaining wall, and an undeveloped downslope area extending from Lawrence Road along the eastern side of Building 31 and the western side of Building 72. With the exception of the parking lot and a pathway along the eastern edge, the project site is covered with grasses and a variety of other plants.

West of the site are a chain-link fence and corporation yard, and further west are the University of California at Berkeley campus, Strawberry Creek, and the Panoramic Hill neighborhood. To the north are LBNL facilities, including the Grizzly Peak substation and undeveloped hillsides, as well as the Lawrence Hall of Science. Further north are residential neighborhoods in the City of Berkeley and the Tilden Regional Park. LBNL facilities including LBNL's Human Genome Laboratory, and the University of California's Botanical Garden lie to the east. University of California-owned lands, regional open space areas, and the Claremont neighborhood of Oakland all lie to the south. The nearest residences are in the Panoramic Hill neighborhood of Berkeley, which is approximately one-third mile south of the project site at its closest point.

The project site is currently accessible from the southwest by Lee Road, which ends southwest of Building 66, and from the Building 66 rear parking lot; to the east from Lawrence Road; and from the north by the Building 31 driveway and parking lot via a dirt road that connects the Building 31 and Building 66 rear parking areas. The site is within LBNL's vegetation control area, and, as a result, grasses and plants are kept at a minimum height during fire season. As another component of the Lab's Vegetation Management Plan, non-native trees are removed within 100 feet of Buildings 62 and 66.

4.2 ENVIRONMENTAL RESOURCES NOT AFFECTED

**Floodplains/
Wetlands:** The Proposed Action would not take place within a 100-year floodplain or on or in the vicinity of wetlands.

Land Use: The Proposed Action would take place on an area that is bounded by similar scale and use scientific buildings, a roadway, and parking lot, and would be served by existing but reconfigured utility systems. The Proposed Action would not conflict with LBNL planning documents, including its Long Range

Development Plan. The area has been previously identified as a location of a future laboratory building in LBNL planning documents. A brief, supporting analysis of Land Use is included in Appendix “B.”

Socioeconomics: Federal funding for the Proposed Action would be from national sources and would not represent a significant commitment of local resources. Employment from the Proposed Action would draw upon local, regional, and international (for visiting scientists) populations and would not be perceptible in any particular employment or housing market. A brief, supporting analysis of population, employment and housing is included in Appendix “C.”

Environmental Justice: Due to the low incidence of localized, off-site impacts from the project, as well as to the demographics of populations living nearest the site of the Proposed Action, there would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations from the Proposed Action. A brief, supporting analysis of “Environmental Justice” issues is provided in Appendix “D” of this document.

4.3 ENVIRONMENTAL RESOURCES POTENTIALLY AFFECTED

4.3.1 GEOLOGY, SOILS, AND SEISMICITY

SETTING

The Proposed Action is located in the San Francisco Bay Area, which, due to the presence of the San Andreas Fault System, is a region of significant seismic activity. Recent studies sponsored by the United States Geological Survey (USGS) estimate that there is a 70 percent likelihood of a Richter magnitude 6.7 or higher earthquake occurring in the Bay Area in the next 30 years. The project site could experience a range of ground-shaking effects during an earthquake on one of the active earthquake faults in the San Francisco Bay Area. Excessive groundshaking could also cause secondary ground failures such as seismically-induced landslides, surface rupture, and differential settlement that could expose people to the risk of injury and cause structural damage to buildings. The Hayward fault, one of the major active faults in the San Andreas System, extends along the eastern side of the San Francisco Bay and is located 0.3 miles from the project site. Ground-shaking intensities from a major seismic event on the Hayward fault could generate ground motion approaching or exceeding Peak Ground Acceleration of 0.7g. Ground motion of this type would be characterized by the Modified Mercalli Intensity Scale as violent to very violent (ABAG, 2002).⁴ Geotechnical investigations conducted at the project site have estimated

⁴ While the magnitude is a measure of the energy released in an earthquake, intensity is a measure of the ground shaking effects at a particular location. Shaking intensity can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The Modified Mercalli (MM) intensity scale is commonly used to measure earthquake effects due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total). MM intensities ranging from IV to X could cause moderate to significant structural damage. **Acceleration** is scaled against a value that everyone is familiar with, that is, acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0g). Acceleration of 1.0g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds. Acceleration is expressed by a “g” which is gravity = 980 centimeters per second squared.

peak bedrock accelerations of 0.70g from an earthquake occurring on the Hayward fault,⁵ and 0.40g from an earthquake occurring on the San Andreas Fault, located approximately 19 miles southwest of the project site. As a comparison, ground motion during the 1989 Loma Prieta earthquake at the Santa Cruz Mountain epicenter reached 0.64g. Due to its close proximity to the project site, the Hayward fault is likely to generate the most significant levels of groundshaking.

Earthquakes and groundshaking in the Bay Area are unavoidable and are expected to occur at some time during the life of the Proposed Action. Although some structural damage is typically not avoidable, building codes and local construction requirements have been established to protect against building collapse and major injury during a seismic event.

The project site is not within the most recently delineated Alquist-Priolo Earthquake Fault Zone (A-P Zone).⁶

The project site is not located in an area identified by the California Geological Survey (CGS) as being susceptible to liquefaction hazards, and the geotechnical report prepared for the project site does not identify liquefiable soils. Potential liquefaction hazards are therefore considered less than significant.

The project site is located in a CGS-designated Seismic Hazard Zone for earthquake-induced landslides. The Seismic Hazards Mapping Act (SHMA) was enacted in 1990 to protect the public from the effects of strong groundshaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones.

4.3.2 HYDROLOGY AND WATER QUALITY

SETTING

The LBNL site is situated in the ridges and drainage areas of Blackberry and Strawberry Canyons in the East Bay Hills within the Strawberry Creek watershed. Runoff from the project site currently drains to “No Name” Creek, which is a tributary of Strawberry Creek. The Proposed Action consists of two buildings, an access road, and associated parking that would result in additional impervious surface area and consequently an increase in surface water runoff from the project site.

The project site is generally characterized by steep slopes underlain by bedrock, with a shallow soil surface. Groundwater flow through bedrock is typically characterized by fracture flow that has slow recharge and low yield, while groundwater flow in the drainages is unconfined flow and

⁵ In the near-fault region of the Hayward fault (i.e., less than 2 km from the fault, which includes the project site), an additional seismic “fling” can be expected. This is accounted for in the latest version of the California Building Code.

⁶ Alquist-Priolo Zones designate areas most likely to experience fault rupture, although surface fault rupture is not necessarily restricted to those specifically zoned areas.

fluctuates with seasonal precipitation. This area is not underlain by an easily accessible, high-yield, confined aquifer system that is capable of supplying many users. However, this area may represent a portion of the recharge area for the alluvial aquifer underlying the East Bay plain to the west.

4.3.3 BIOLOGICAL RESOURCES

SETTING

The Proposed Action is located in the steep ridges and draws on the western side of the Oakland-Berkeley hills, in the general area of Blackberry and Strawberry canyons and within the Strawberry Canyon watershed. No Name Creek and Chicken Creek, tributaries to Strawberry Creek, are located downslope from the proposed site, and Strawberry Creek itself is approximately 0.1 miles to the southeast at its closest point to the site. Vegetation on and adjacent to the Proposed Action site is primarily non-native annual grassland, and the site is located between existing multi-story buildings to the northwest and southeast.

SPECIAL STATUS WILDLIFE

Review of the California Natural Diversity Database (California Department of Fish and Game, 2002) for the Oakland East, Oakland West, Richmond, and Briones Valley 7.5 minute quadrangles indicate a generally low potential for adverse impacts to legally sensitive animal species. Many of the species on the list are associated with either wetlands or salt-water habitats within these quadrangles, and the non-native grassland characteristic of the site does not provide the required habitat for these particular species.

The Alameda whipsnake (*Masticophis lateralis euryxanthus*; listed as threatened both federally and by the state) is found in shrub communities and adjacent habitats (U.S. Fish and Wildlife Service, 2000). Habitats adjacent to brush communities may be crucial to Alameda whipsnakes, which remain in grassland habitats near shrub areas for up to several weeks at a time (U.S. Fish and Wildlife Service, 2000). Other typical habitat elements for this species include rock outcrops, which provide areas where prey (particularly lizards) may be found and where whipsnakes may find shelter.

There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that apply to the LBNL site.

4.3.4 HISTORIC AND ARCHAEOLOGICAL RESOURCES

SETTING

As part of the environmental analysis for the 1987 LRDP EIR, as amended, (LRDP EIR), all undeveloped land and proposed building locations (including the proposed Molecular Foundry site) were examined for potential historical and archaeological resources. All reasonably accessible parts of the LBNL area were examined. Special attention was given to areas of

relatively flat land or rock outcrops. The steep hillsides were not examined intensively, although transects through accessible areas were made. Based on the findings of the historic and archaeological resources survey, no indications of historic or prehistoric archaeological resources were encountered in any location within the project site.

More recently, an archaeological survey of four parcels (70 acres total), and a recordation and evaluation of four historic structures was conducted for LBNL in September 1999. Portions of the surveyed areas were adjacent to the project site on its eastern and western sides. Based on the results of the survey, with concurrence from the State Historic Preservation Officer (SHPO), no indications of significant historic or prehistoric archaeological resources were encountered. No historic structures exist on the project site as it is currently partially vacant, and used as a parking lot.

4.3.5 VISUAL QUALITY

SETTING

The Proposed Action is located in an area intermittently visible from surrounding short- and long-range viewpoints. The site is adjacent to the easternmost⁷ perimeter of the UC Berkeley campus in a scenic area that encompasses the Oakland and Berkeley Hills, and Blackberry and Strawberry Canyons. The hills provide a semi-natural, vegetated open-space backdrop to the project site. Most of the western slopes of these hills are wooded with either native canyon stands of oak and California bay or with introduced plantations of eucalyptus or conifers.

Although adjacent to the Building 66 and 72 complexes and roadways, the proposed, approximately 2½-acre site is currently mostly undeveloped and includes several trees and grassland areas, and an asphalt surface parking area (see Figure 11A) at the central portion of the site. It is these terrain features, most notably the slopes, which comprise the Strawberry Canyon and the surrounding stands of tall trees that provide cover to the Proposed Action site from most potential viewpoints in the surrounding region. The site is located in a portion of Strawberry Canyon that is visible to persons along a short segment of Lawrence Road in the immediate vicinity of the site or further east and uphill of the site along portions of Centennial Drive. The site is also visible from nearby private development along Grizzly Peak Boulevard and the Panoramic Hill residential neighborhood, and from a narrow view corridor through the adjacent UC Berkeley campus that includes a portion of Memorial Stadium's north-facing seats (see Figure 11B).

Nearby and adjacent buildings include the National Center for Microscopy (Building 72) and the Material Sciences building (Building 66), as shown in Figures 11C and 11D, respectively. The buildings in the Materials and Chemical Research Planning Area are designed to take advantage of the long-range Bay views afforded by the Strawberry Canyon view corridor. Existing vantage points on the LBNL site within a quarter mile of the site include locations along north-south axis

⁷ This analysis incorporates true compass directions.



11A Easterly view of project site from parking lot



11B Southwesterly view of Strawberry Canyon from project site

SOURCE: Environmental Science Associates

LBNL Molecular Foundry / 202211 ■

Figures 11A & 11B
Site Photographs



11C Northerly view of Building from project site



11D Southerly view of Buildings 66 and 62 from project site

SOURCE: Environmental Science Associates

LBNL Molecular Foundry / 202211 ■

Figures 11C & 11D
Site Photographs

streets such as Lawrence Road, at locations with higher elevations to the east of the site along Centennial Drive, and at traffic turn-outs. Views afforded from these vantage points include long-range views westwards towards the Bay, including historic landmarks such as the Golden Gate Bridge and Alcatraz Island, as well as the urban landscape of the adjacent City of Berkeley and UC Berkeley campus development (see Figure 11E).

4.3.6 TRAFFIC AND CIRCULATION

SETTING

The primary access routes to LBNL are Grizzly Peak Boulevard / Centennial Drive, University Avenue, Hearst Avenue and Piedmont Avenue / Gayley Road. Access to the site is provided by three sentry-controlled gates: Blackberry Canyon (main gate), Strawberry Canyon, and Grizzly Peak. In 1998 approximately 9,100 vehicles passed through these three gates (access and egress) on a typical work day – about 930 and 820 vehicles during the a.m. and p.m. peak hours, respectively.

LBNL operates a free shuttle bus service within the LBNL site, and between LBNL and the UC Berkeley campus and downtown Berkeley (connecting with the Berkeley BART Station and AC Transit bus lines). Another off-site shuttle provides express service to and from the Rockridge BART Station at select commute hours. The principal off-site shuttle operates from 6:30 a.m. to 6:50 p.m., running every ten minutes up until 5:50 p.m., when shuttles run at 20-minute intervals. There is a shuttle bus stop at the project site, currently serving Buildings 72 and 66.

Traffic level of service (LOS) conditions were assessed at the following five key (gateway) intersections for weekday a.m. and p.m. peak traffic hours:

- University Avenue and Shattuck Avenue (southbound) – signalized
- Hearst Avenue and La Loma Avenue / Gayley Road – signalized
- Gayley Road and Stadium Rim Way – all-way stop control
- Piedmont Avenue and Dwight Way – signalized
- Grizzly Peak Road and Centennial Drive – all-way stop control

The LOS concept is a qualitative characterization of traffic conditions associated with varying levels of traffic, based on delay and congestion. Descriptions of conditions range from LOS A (free-flow condition) to LOS F (jammed condition). LOS C or better are generally considered to be satisfactory service levels, while LOS D is minimally acceptable, LOS E is undesirable, and LOS F conditions are unacceptable.

Traffic counts were conducted at each of the study intersections while UC Berkeley was in session. The five study intersections currently operate at LOS B during a.m. and p.m. peak hours, except the All-Way Stop Sign-Controlled intersection of Gayley Road / Stadium Rim Way, which operates at LOS F during both peak hours. The supply of parking spaces at LBNL is limited, and its use is controlled by a permit system (strictly enforced) that allocates available parking spaces to different types of employees and visitors.

4.3.7 AIR QUALITY

SETTING

The project site is located in the City of Oakland, within the boundaries of the San Francisco Bay Area Air Basin (Bay Area). The Bay Area's moderate climate steers storm tracks away from the region for much of the year. Berkeley's proximity to the refreshing onshore breezes stimulated by the Pacific Ocean provides for generally very good air quality at LBNL. However, during the ozone smog season (summer and fall), transport studies have shown that emissions generated in Oakland and Berkeley are often transported to other regions of the Bay Area and beyond (e.g., Central Valley) that are more conducive to the formation of ozone smog. In the winter, reduced solar energy and cooler temperatures diminish ozone smog formation, though increase the likelihood of carbon monoxide formation.

The federal Clean Air Act of 1970 established maximum concentration criteria standards for six ambient air pollutants – ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. Each of these standards was set to meet specific public health and welfare criteria. Individual states were given the option to adopt more stringent state standards for criteria pollutants and to include other pollutants. California has done so with many pollutants through its own clean air act.

The Bay Area Air Quality Management District (BAAQMD) is the regional agency with regulatory authority over stationary sources in the Bay Area, while the California Air Resources Board (CARB) has regulatory authority over mobile sources such as construction equipment, trucks, and automobiles throughout the state. The BAAQMD has the primary responsibility to meet and maintain the state and federal ambient air quality standards in the Bay Area.

Both the state and federal Clean Air Acts require areas to be classified as either *attainment* or *non-attainment* for each criteria pollutant, based on whether or not the state and national standards have been achieved. Therefore, areas in California have two sets of attainment/non-attainment designations: one for the federal standards and one for the state standards. The Bay Area Air Basin is currently designated as nonattainment for state ozone standards and the federal 1-hour ozone standards, although ozone levels measured in the Berkeley and Oakland area do not exceed the standard. Ozone and ozone precursors such as reactive organic compounds and oxides of nitrogen are the pollutants of greatest concern in the Air Basin. The Air Basin is also designated as nonattainment for the state PM-10 standard (particulate matter of 10-micron diameter or less). Urbanized portions of the Bay Area (specifically known as the San Francisco – Oakland – San Jose federal planning area) are designated "maintenance" with respect to the federal carbon monoxide standard. The "maintenance" designation denotes that the area, now "attainment," had once been designated as "nonattainment." The Air Basin is designated as either attainment or unclassified for all other pollutants.

The project site is considered typical of urban areas in the East Bay. PM-10 levels measured in Fremont (the nearest monitoring station in Alameda County that measures PM-10) indicate that the four days in 2001 with the highest levels of PM-10 were January 7 (57.6 micrograms per



11E Long-range westerly view from project site

SOURCE: Environmental Science Associates

LBNL Molecular Foundry / 202211 ■

Figure 11E
Site Photographs

(This page left intentionally blank)

cubic meter), January 1 (54.5), January 19 (43.6), and May 19 (38.1). Ozone levels in the San Francisco Bay Area in 2001 exceeded state 1-hour standards on 15 days, the federal 1-hour standard on 1 day, and the federal 8-hour standard on 7 days.⁸ Bay Area counties experience most ozone exceedances during the period from April through October. Construction equipment, building emission sources (such as heaters), and motor vehicles are typical LBNL activities that would emit the ozone precursors reactive organic gas (ROG) and nitrogen oxides (NOx). These emissions may photochemically react in the presence of sunlight and warm temperatures, creating ozone smog. As noted above, because of wind patterns, this transformation occurs some miles distant. Thus, a project's emissions may not have a local impact and may be very small in terms of quantities, but could contribute to existing violations of state and federal ozone standards.

HAZARDOUS AND TOXIC AIR EMISSIONS SOURCES

There are no known facilities within a ¼-mile of the LBNL boundary that use acutely hazardous substances in excess of threshold planning quantities (SARA Title III, Community Right to Know). Consequently there is no significant impact in the area from use of acutely hazardous substances by businesses, including LBNL. "Acutely hazardous material" means any material defined pursuant to subdivision (a) of Section 25532, California Health and Safety Code.

State environmental law requires that air districts create an inventory of facilities with potential to emit specified Toxic Air Contaminants (TAC), and make this information available to the public upon request. The BAAQMD's 2000 Toxic Air Contaminant Control Program Annual Report calculates that the annual excess cancer risk in the Bay Area is about 167 per million people from stationary sources, and about 450 in a million from diesel exhaust. Thus, diesel emissions create about 70% of toxic and cancer-causing emissions found in ambient air. LBNL updates its TAC inventories each year during renewal of operating permits, which is required of all regulated facilities in the Bay Area.

4.3.8 NOISE

SETTING

Noise is usually defined as an unwanted sound. Noise is typically measured in decibels, which is a logarithmic scale for expressing sound pressure-level energy. The *A scale* of noise measurement mathematically adjusts sound pressure levels that approximate the response of the human ear to different frequencies. Noise typically attenuates (diminishes) by about 6 dBA for every doubling of distance from the source. Thus, a noise measured at 90 dBA 50 feet from the source would be about 84 dBA at 100 feet, 78 dBA at 200 feet, 72 dBA at 400 feet, and so forth. Noise standards are addressed in local general plan policies and noise ordinances. A project could expose people to, or generate, noise levels in excess of these standards in two ways. First, a project could expose sensitive receptors to noise by introducing incompatible land uses (e.g., building a helipad next to a school) in an existing noise environment. Second, a project itself

⁸ This is an average that summarizes data from all of the monitoring stations in the Bay Area.

could create an increase in ambient noise levels that negatively affect existing nearby sensitive receptors (e.g., putting a petroleum refinery in a residential neighborhood).

The *Oakland Comprehensive Plan* contains guidelines for determining the compatibility of various land uses with different noise environments (City of Oakland, 1974). The Noise Element recognizes that some land uses are more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved.

The City of Oakland also regulates short-term noise through city ordinances, which include a general provision against nuisance noise sources (Planning Code, Section 17.120). The factors that are considered when determining whether the ordinance is violated include: a) the level, intensity, character, and duration of the noise; b) the level, intensity, and character of the background noise; and c) the time when, and the place and zoning district where, the noise occurred.

The City of Berkeley's General Plan Noise Element also contains guidelines for determining the compatibility of various land uses with different noise environments (City of Berkeley). Generally, the noise level for residential, hotel, and motel uses is 60 dBA or less, while conditionally acceptable noise levels range from over 60 dBA to 75 dBA (may require insulation, etc.), and unacceptable noise levels are over 75 dBA. The City of Berkeley's Community Noise Ordinance sets limits for permissible noise levels during the day and night according to the zoning of the area. If ambient noise exceeds the standard, that ambient noise level becomes the allowable noise levels. For R-1 and R-2 residential areas, the receiving noise level (not to be exceeded by more than thirty minutes any hour) is 55 dBA from 7:00 a.m. to 10:00 p.m., and 45 dBA from 10:00 p.m. to 7:00 a.m. For R-3 uses and above, the receiving noise level (not to be exceeded by more than thirty minutes any hour) is 60 dBA from 7:00 a.m. to 10:00 p.m., and 55 dBA from 10:00 p.m. to 7:00 a.m.

Construction noise levels would fluctuate depending on the particular type, number, and duration of use of various types of construction equipment. Table 3, below, describes typical construction noise levels at 50 feet. The effect of construction noise would depend upon the volume (expressed in dBA) generated, the distance between noise sources and the nearest noise-sensitive uses, and the existing noise levels at those uses. The City of Oakland allows short-term (less than 10 days) construction noise received in residential areas between the hours of 7:00 a.m. and 7:00 p.m. on weekdays to reach levels of 80 dBA (65 dBA on weekends between 9:00 a.m. and 8:00 p.m.), and long-term construction noise (more than 10 days) to reach levels of 65 dBA on weekdays and 55 dBA on weekends. The City of Berkeley also requires that construction be restricted to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and the hours of 9:00 a.m. to 8:00 p.m. on weekends and holidays. However, the City of Berkeley requires that maximum noise levels should be controlled to not exceed 75 dBA at the nearest properties for mobile equipment and 60 dBA for stationary equipment.

TABLE 3
TYPICAL COMMERCIAL CONSTRUCTION NOISE LEVELS

Phase	(L_{eq})^a
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Exterior Finishing	89
Pile Drilling	90

^a Estimates correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase and 200 feet from the other equipment associated with that phase.

SOURCES: U.S. Environmental Protection Agency, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, December 1971.
ESA *Richmond Transport Tunnel Study*, (pile drilling data) January 1997.

4.3.9 PUBLIC SERVICES

FIRE AND POLICE PROTECTION

LBNL maintains its own on-site fire protection services through a contract with Alameda County and its own security force. These units are staffed in proportion to LBNL's needs for fire suppression and security protection. Currently, three fire trucks and an ambulance are available on-site at all times. The LBNL security unit is part of the UC Police Services and includes sworn officers and contract protective service officers. Contracted personnel staff the LBNL entry gate kiosks.

SCHOOLS, PARKS AND OTHER PUBLIC FACILITIES

The proposed Molecular Foundry would contain primarily office, teaching, and laboratory spaces within the 86,500-square-foot Molecular Foundry building. The uses proposed for this building and any incremental population increases induced directly and indirectly throughout the region by Proposed Action employment opportunities would not generate the need for additional school, park, and other public facilities.

4.3.10 PUBLIC UTILITIES

SETTING

The LBNL site receives its water from the East Bay Municipal Utility District (EBMUD). The proposed project would be served by EBMUD's Shasta Pressure Zone (PZ), which provides

water service to customers within an elevation range of 900 to 1050 feet, and the Berkeley View PZ, which provides water service to customers within an elevation range of 1,050 to 1,250 feet. The LBNL site receives its water supply via a 12-inch meter in Campus Drive in the Shasta PZ and via a 6-inch meter in Summit Road from the Berkeley View PZ. In addition, Department of Energy (DOE) owns and maintenance two 200,000-gallon storage tanks on site for emergency supply in the event of interruption of EBMUD's service and a third 200,000-gallon emergency tank is under construction in the East Canyon area upslope of the project site. The existing distribution system supplies water for all laboratory uses and has sufficient capacity to meet the flow rate and duration requirements for both daily use and fire protection. Although the project would be expected to increase use by up to approximately 2,500 gallons per day, it would not cause a significant impact as the two existing EBMUD PZs have combined storage capacity of 3.1 million gallons. Wastewater from LBNL is carried via a gravity-flow system through two monitoring stations, one located at Hearst Avenue and the other at Centennial Drive in Strawberry Canyon. The Proposed Action would be served by the Centennial Drive Station, which connects first to the University of California's sewer system, then to the City of Berkeley's public sewer system, and then to a regional wastewater treatment plant located southwest of the I-80/I-580 interchange in Oakland. The facility is owned by EBMUD and serves six East Bay cities and the Stege Sanitary District.

All LBNL sanitary sewage runs through the City of Berkeley's basin No. 17. The City Department of Public Works has confirmed that there is considerable remaining average and peak wet weather capacity in this basin. The proposed project would most likely be directed into subbasin #17-003; this subbasin has more than adequate average and peak wet weather capacity to accommodate the estimated 1,200 gpd sanitary sewage flows from the proposed project.

The main concern with sewer flow in this subbasin and region wide in the EBMUD system is the infiltration and inflow of stormwater into the sanitary sewer system due to the poor condition of aging sewer pipes (known as "infiltration / inflow" or "I/I"). LBNL has aggressively acted to address infiltration / inflow problems in its own system and has made dramatic improvements in recent years. In addition, an aggressive plumbing maintenance and upgrade effort has been undertaken during the past 15 years by LBNL, along with installation of water saving devices and systems, to substantially lower average sewer flows as well. The savings realized by these on-going efforts has reduced both peak wet weather as well as average sewer flows by well over half. Moreover, LBNL's peak wet weather infiltration / inflow rate is less than half of that of the City of Berkeley's and it is approximately only ten-percent of that found in EBMUD's district. LBNL continues to seek ways in which to reduce both water consumption and sewage generation.

In 1984, LBNL's allocated sewer flow was approximately 200,000 gallons per day (gpd). Due to historic infiltration / inflow, that amount was much higher during peak wet weather events. In recent years, due to the aforementioned efforts, that average annual sewer flow has been reduced by approximately 100,000 gpd, and by even much greater amounts during wet weather. The proposed Molecular Foundry is expected to generate less than 1,200 gpd of sewage. This incremental amount falls well below what was allocated to LBNL previous to its sewer upgrade projects. It is also consistent with the 1987 LRDP EIR, as amended, which anticipated, analyzed, and found less-than-significant impacts for buildout levels of sanitary sewage at much higher than

current levels, even with inclusion of the proposed project. Moreover, because the sewer lines installed for the Molecular Foundry would be brand new, state-of-the-art, and virtually free of stormwater infiltration, the proposed project would be incremental in both dry and wet weather and would not contribute to the problem of I/I surplus flows during peak wet weather events.

Through the University of California, LBNL currently pays the City of Berkeley for assessed sewer services. In addition, the University has contributed to the City of Berkeley's sewer upgrade program. This program is intended to increase wet weather flow capacity and decrease infiltration / inflow conditions.

Because of LBNL's hillside location a storm-drainage system has been installed that discharges into the North Fork of Strawberry Creek to the north and Strawberry Creek to the south.

Non-hazardous solid waste generated at the project site would be collected by Richmond Sanitary Service and taken to the Richmond Landfill.

4.3.11 ENERGY

SETTING

The LBNL "Ten-Year In-House Energy Management Plan" establishes target goals, and is updated each year. Important components of meeting LBNL goals include a survey and study program to identify cost-effective energy savings measures; a retrofit program to implement the cost-effective projects; and a new buildings program that would ensure that new facilities meet all applicable energy performance standards, including both those developed by the Department of Energy Executive Order 12003 and 10 Code of Federal Regulations Part 436 and those issued by the State of California, Title 24.

Recently, the Grizzly Peak electric substation, which formerly served both LBNL and the UC Berkeley campus, was expanded to incorporate a new and adjacent substation, the Hill Area UC Substation. This new Hill Area substation allowed the UC Berkeley campus to draw dedicated power from it, thus allowing the LBNL exclusive use of the Grizzly Peak substation. Therefore, electric capacity was expanded for both UC Berkeley and LBNL.

4.3.12 HAZARDS AND HUMAN HEALTH

SETTING

LBNL maintains its own Environment, Health, and Safety (EH&S) division to oversee and monitor all LBNL issues dealing with hazards, hazardous materials, and human health and safety. The EH&S Division ensures compliance with all applicable Federal, state, and LBNL-imposed hazard and safety related regulations, laws, and standards. As part of the EH&S Division mission, LBNL has developed a stringent hazardous materials program, which includes personnel training and careful management, handling, and storage policies for hazardous materials. LBNL maintains its own on-site fire department and emergency medical services, along with hazardous

response personnel, which would minimize any risk associated with wildland fires. In 2002, to increase efficiency and efficacy, staffing and operation duties of LBNL's on-site fire department were awarded to Alameda County.